
State of Washington

Volunteer Firefighters' Relief and Pension Fund Actuarial Valuation

As of December 31, 2004



Prepared by

Office of the State Actuary





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Volunteer Firefighters' Relief and Pension Fund

As of December 31, 2004





Washington State Legislature

Office of the State Actuary

Report of the Actuarial Valuation of the Volunteer Firefighters' Relief and Pension Fund As of December 31, 2004

This report represents the results of the actuarial valuation of the assets and liabilities of the Volunteer Firefighters' Relief and Pension Fund of Washington as of December 31, 2004. The valuation was prepared in accordance with RCW 41.24.320.

Member and beneficiary data were provided by the Board of Volunteer Firefighters. Comparisons were made of the current to prior year's data. Additionally, a series of data edits were performed. The data are sufficient and reliable for the purposes of this valuation. Unaudited asset information was provided by the State Investment Board and the State Treasurer.

The investment return assumption used in this valuation was adopted by the board in 2001.

Demographic assumptions were developed by the Office of the State Actuary. The assumptions are developed from actual experience. An experience study of retirement and termination is performed annually. Where there are insufficient data for an experience study, we use our best estimate of the expected future experience. The assumptions are reasonable and represent the expected future experience.

The valuation includes all benefits that were in effect on the valuation date plus the Laws of 2005.

This report was prepared in accordance with recognized actuarial practices and the procedures consistent with the recommendations of the American Academy of Actuaries.

Sincerely,

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Section I

Summary and Highlights





Summary and Highlights

The purpose of an actuarial valuation is to:

- ❖ Develop contribution rates that are adequate to support the benefits of the system, as prescribed in statute;
- ❖ Measure the funding progress of the system;
- ❖ Compare experience with assumptions used;
- ❖ Detect significant demographic changes;
- ❖ Highlight significant plan changes; and,
- ❖ Highlight significant assumption changes.

Contribution Rates:

Per Person Contribution Rates		
Valuation	2003	2004
Pension Rate		
Employee	\$ 30	\$ 30
Employer	30	30
State	<u>61</u>	<u>61</u>
Normal Cost Rate	\$ 121	\$ 121
State UAAL or (Surplus) Rate	<u>(75)</u>	<u>(45)</u>
Pension Rate	46	76
Relief Rate		
Employer	10	10 *
State	<u>92</u>	<u>90</u>
Relief Rate	102	100
Operating Expenses		
Administration and Expenses	\$ 17	\$ 22

**The employer fee for the Relief Plan was increased from \$10 to \$30 effective July 24, 2005.*

The pension rate is the estimated annual cost determined by the actuarial valuation. It is comprised of the normal cost rate, plus a rate to amortize the unfunded actuarial accrued liability, or minus a rate to amortize a surplus.

The relief rate and the rate to pay for operating expenses are based on actual annual costs.

The pension costs are allocated to pension members. Relief costs and operating expenses are allocated to all members.



Measurement of Funding Progress:

We have used the *Funding Ratio* as a measure of funding progress. The *Funding Ratio* is the percentage of benefits earned to date which are covered by the actuarial value of assets. The funding ratio decreased from 116 percent as of December 31, 2003, to 113 percent as of December 31, 2004.

Comparison of Experience to Assumption:

- ✓ Investment Return on the Actuarial Value of Assets was 3.0 percent, compared to the 8.0 percent assumption.
- ✓ Investment Return on the Market Value of Assets, as reported by the State Investment Board, was 13.4 percent.
- ✓ Retirements were 12 percent below expected (77 compared to the 87 expected).
- ✓ Terminations were 15 percent above expected (1,470 compared to the 1,280 expected).

Significant Demographic Changes:

- ✓ The number of active members covered by the Pension Plan increased by 66 (plus 1 percent).
- ✓ The number of active members covered by the Relief Plan increased by 61 (0 percent).
- ✓ Total number of retirees increased by 117 (plus 4 percent).
- ✓ Total annual pension benefits increased by \$256,531 (plus 4 percent), from \$6,382,532 to \$6,639,063.

Distribution of Membership Between 2003 and 2004			
	2003	2004	Increase
Number of Active Members in Relief Plan	17,752	17,813	0%
Number of Active Members in Pension Plan*	12,043	12,109	+1%
Percent of Volunteers Covered by Pension Plan	68%	68%	
Average Age	41.0	41.0	
Average Years of Service	10.0	10.0	
Number of Retirees/Beneficiaries	2,993	3,110	+4%
Number of Terminated Vested	4,511	4,657	+3%
Number of Survivors (Line of Duty)	13	14	
Number of Disabilities	16	16	

*Includes 38 Emergency Medical Technicians and 290 Reserve Law Enforcement Officers in 2004.

The number of Relief members in 2004 is estimated to be 15,844 counting members with multiple memberships once only.



Significant Plan Changes:

Effective July 24, 2005, Chapter 37, Laws of 2005 (SB 5135), increases the annual fee that each municipal corporation must pay for Relief Plan members from \$10.00 to \$30.00.

Significant Assumption Changes:

There were no assumption changes since the prior valuation.

Significant Relief Benefits not Reflected in the Model:

The costs for the relief benefits, including medical benefits, disability payments, and death benefits, shown in this report are based on actual annual costs. Appendix F shows the cost of the relief benefits for the current members on a projected basis, including an assumption for the trend rate, a measure of the rate of change over time of the per capita health care rates. The costs for the relief benefits for the current members based on projected amounts shown in the appendix are significantly higher than the costs shown in the rest of this report.







Section II

Analysis of the Valuation





Analysis of the Valuation

- ❖ Funding Progress
- ❖ Contribution Levels
- ❖ Economic Experience
- ❖ Demographic Changes in Membership
- ❖ Demographic Experience

Funding Progress

Funding Ratio:

There are various ways of measuring funding progress or funding status. We use a measure of funding status called the Funding Ratio. A Funding Ratio is the ratio of assets to liabilities on the valuation date.

Funding Ratios, when developed on a comparable basis, serve two important functions. They promote comparison between retirement systems and, in time sequence, are valuable as a trend indicator of funding progress or lack thereof.

At present the Volunteer Firefighters' Pension Plan is fully funded. The funding ratio is 113 percent. The Funding Ratio itself has no part in the calculation of the required contribution. It is strictly an independent measuring device to promote analysis of funding progress and comparison to other retirement systems.

Calculation of Funding Ratios:

The Funding Ratio is calculated as the ratio of asset value to the present value of credited projected benefits as of the valuation date. The methods used to determine these items are as follows:

- ✓ *Asset Value* - For this purpose, asset values used are the Actuarial Value of Assets described in Appendix B and developed in Section IV.
- ✓ *Present Value of Credited Projected Benefits* - Benefits are projected to retirement, including future service, but prorated by only that service earned to date.



**Components of the Present Value
Of Credited Projected Benefits and
The Percentage of Each Covered by Assets**
(Dollars in Thousands)

	Credited Projected Liabilities***			Asset Value	Portion of Liability Covered by Assets			Funding Ratio
	Employee (1)	Retiree (2)	Employer (3)		(1)	(2)	(3)	
2004	\$4,763	\$73,106	\$28,793	\$120,040	100%	100%	146%	113%
2003	4,740	70,874	27,767	120,026	100%	100%	160%	116%
2002**	4,709	67,765	28,782	123,618	100%	100%	178%	122%
2001*	4,668	60,451	25,858	128,799	100%	100%	246%	142%
2000*	4,658	57,122	25,933	126,332	100%	100%	249%	144%
1999	4,616	55,998	28,260	117,622	100%	100%	202%	132%
1998**	4,158	52,940	28,084	102,434	100%	100%	161%	120%
1997	4,055	39,439	19,750	90,835	100%	100%	240%	144%
1996	3,092	37,398	20,365	78,165	100%	100%	185%	129%
1995*	3,063	35,493	19,980	69,065	100%	100%	153%	118%
1994	3,029	32,723	19,071	61,576	100%	100%	135%	112%
1993*	3,029	30,542	21,099	59,360	100%	100%	121%	114%
1992	2,068	28,431	19,848	54,285	100%	100%	120%	108%
1991**	1,882	26,477	19,367	49,114	100%	100%	107%	103%
1990	1,830	21,734	16,940	45,102	100%	100%	127%	111%
1989*	1,800	20,448	16,217	43,104	100%	100%	129%	112%
1988	1,700	20,374	17,856	38,504	100%	100%	92%	96%

(1) Active employee accumulated contributions.

(2) Retired (and terminated vested) liability - employee and employer financed.

(3) Employer financed portion of active credited projected liability.

*Actuarial assumptions changed.

**Includes the effect of benefit increases.

Funding Progress:

Section III of this report examines the development of the Funding Ratio for 2004. The Present Value of Credited Projected Benefits (the cost of that portion of a projected pension attributed to service to date) is \$106,662,000. If the level of the Funding Ratio were about 100 percent, we would have approximately that amount of money in our investment fund to cover these benefits. Assets exceeded that level. As of December 31, 2004, the Actuarial Value of Assets was \$120,040,000. The ratio of the two, or the Funding Ratio, is 113 percent. The difference is a surplus of \$13,378,000.

Contribution Levels

The method used to determine the contribution as a level dollar amount (Entry Age Cost Method -- see Appendix B) divides the contribution into two parts: Normal Cost and Unfunded Actuarial Accrued Liability Cost. The sum of these two should satisfy all of



the liabilities of the system if: the contributions are made regularly; benefits are not increased; and assumptions prove reasonable. Because one source of plan revenue is variable (the premium tax on fire insurance policies), it is unlikely that we will see a smooth pattern of contributions.

The per-person pension contributions are:

Per Person Pension Contribution Rates			
Valuation		2003	2004
Normal Cost			
	Employee	\$30.00	\$30.00
	Employer	30.00	30.00
	State	60.97	61.09
	Normal Cost Rate	\$120.97	\$121.09
Unfunded Actuarial Accrued Liability Rate			
	State UAAL Rate	(74.51)	(45.36)
Total Pension Rate		\$46.45	\$75.73

Economic Experience

Economic assumptions are not as readily analyzed by statistical methods as are demographic assumptions. The experience will reflect the current economic, financial, and inflationary environment.

- ✓ *Investment Returns* - The actual dollar-weighted rate of return for the year was 3.0 percent based on the Actuarial Value of Assets. We had assumed a rate of 8.0 percent for this period. The return based on Market Value, as reported by the State Investment Board, was 13.4 percent. The investment return assumption is the rate of return we expect to earn over the long term. Significant variations of investment earnings from those assumed should be expected over a short period. The funding of pensions is a long-term proposition and deviations from assumptions over a short time do not necessarily affect long-term costs. Future investment return is assumed to be 8 percent per year.
- ✓ *Premium Tax* - 40 percent of the premium tax paid on fire insurance policies is contributed to the plan. The level has fluctuated because the amount of the contribution is net of amounts paid by insurers to guarantee associations.



Premium Tax (40%)			
Fiscal Year	Gross Premium Tax	Assessment Credits	Net Premium Tax
2004	\$ 4,827,084	\$ 100,952	\$ 4,726,132
2003	4,207,632	95,988	4,111,644
2002	3,605,541	620	3,604,921
2001	3,320,026	291	3,319,735
2000	2,869,387	393	2,868,994
1999	2,705,585	29	2,705,556
1998	2,286,092	756	2,285,336
1997	2,553,181	14,080	2,539,101
1996	2,991,158	18,166	2,972,992
1995	2,379,854	50,074	2,329,780
1994	2,460,676	91,147	2,369,529
1993	2,131,915	115,837	2,016,078
1992	1,852,699	116,711	1,735,988
1991	2,246,233	165,584	2,080,649
1990	2,040,938	149,266	1,891,672
1989	2,026,826	126,878	1,899,948

**Gross Premium Tax - Assessment Credits = Net Premium Tax.*

Demographic Changes in Membership

One major factor in any analysis of valuation results is the extent to which the size and composition of the group of covered employees has changed. A comparison of significant characteristics of the covered group as of December 31, 2004, to that as of December 31, 2003, follows.

Actives:

The total number of active members covered for relief benefits increased from 17,752 to 17,813 (0.3 percent).

- ✓ The total number of active members covered for a pension benefit increased from 12,043 to 12,109 (0.5 percent).
- ✓ The average attained age for active members remained the same at 41.0 years.
- ✓ Average service for active members remained the same at 10.0 years.
- ✓ Average benefit service for active members increased from 8.7 years to 8.8 years.



Retirees:

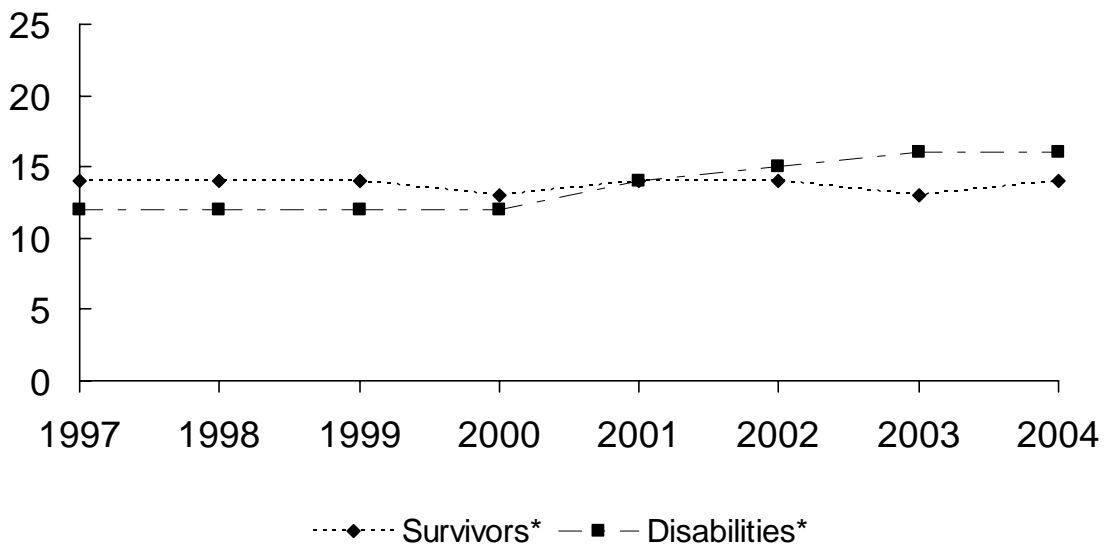
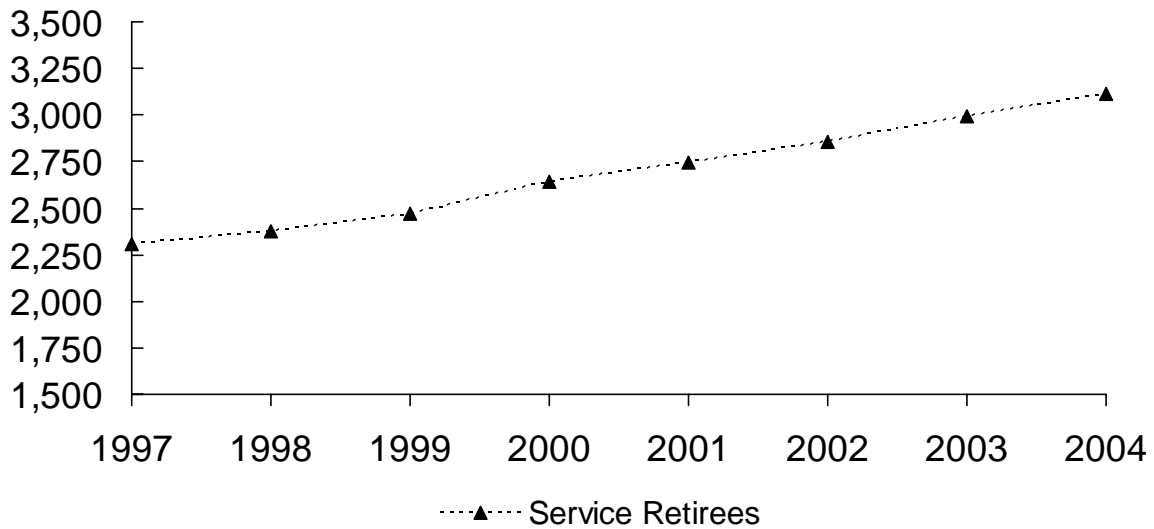
- ✓ The number of retirees increased from 2,993 to 3,110; an increase of 3.9 percent.
- ✓ The average annual benefit payable increased from \$2,132 to \$2,135.

Demographic Experience

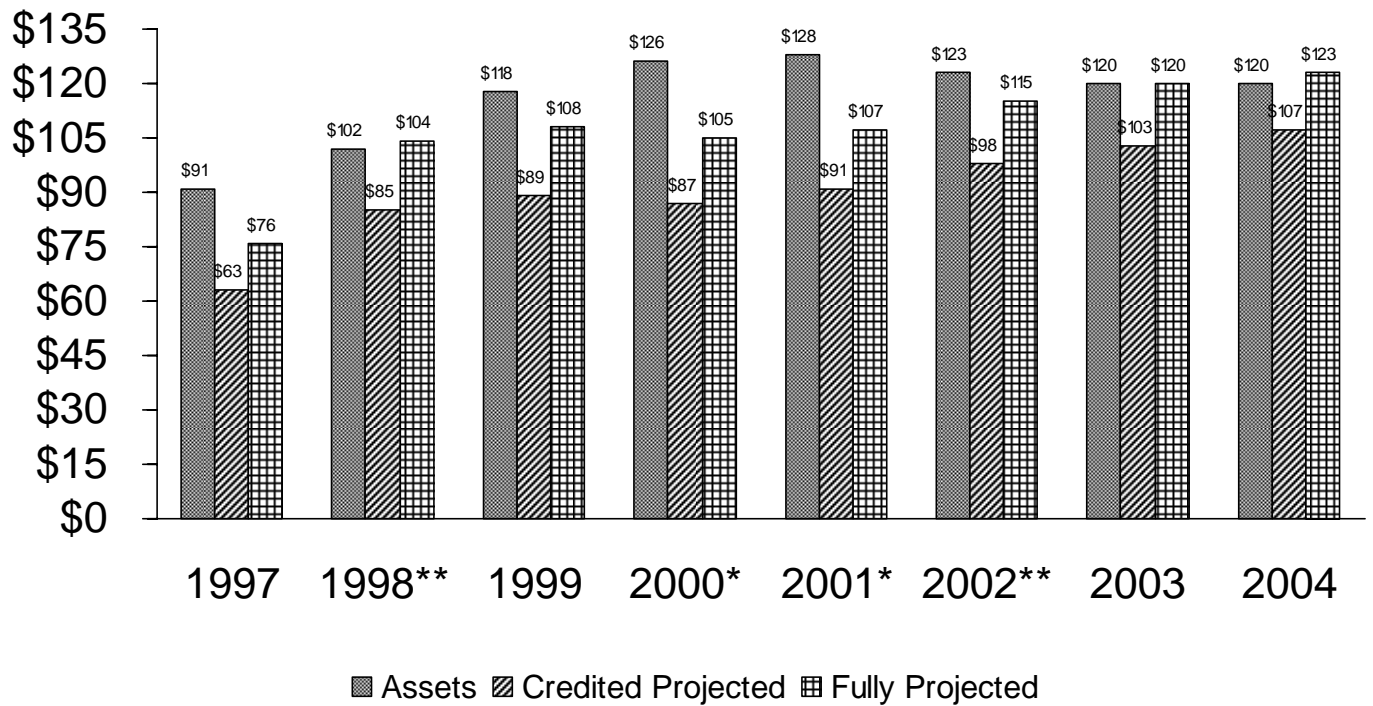
	Actual	Expected	Extra	Extra %
Retirements	77	87	(10)	(12%)
Percentage of Actives Retiring	0.6%	0.7%	(0.1)%	
Terminations	1,470	1,280	190	15%
Percentage of Actives Terminating	12%	11%	1%	



Number of People Receiving Benefits at Year End



Value of Benefits Versus Assets at Year End

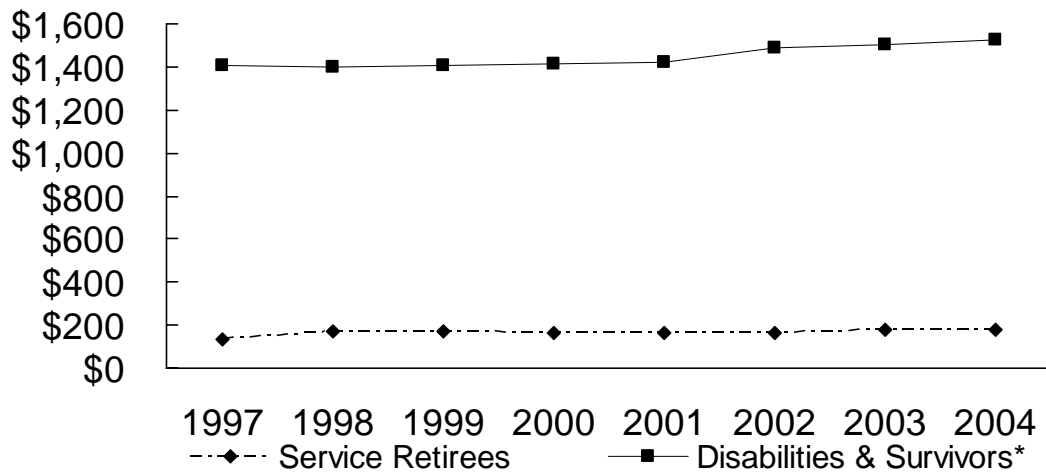


* Actuarial assumptions changed

** Benefits increased

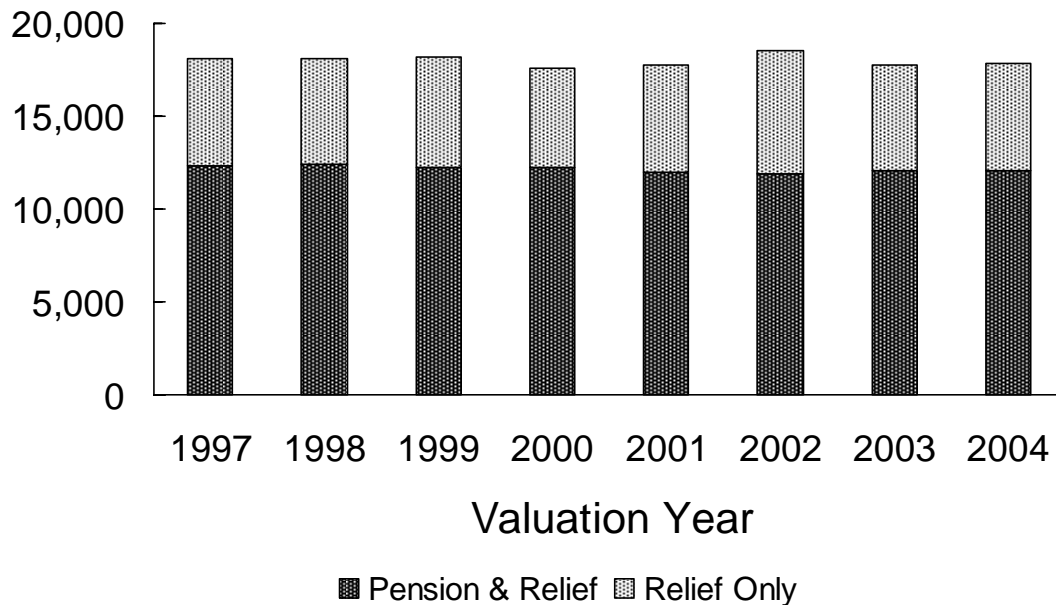


Average Monthly Benefit Payable at Year End



*Relief Plan

Number of Active Members at Year End





Section III

Actuarial Determinations





Section III -

Actuarial Determinations

Table 1
Volunteer Firefighters' Pension and Relief Plan
Development of Required Annual Contributions
(Dollars in Thousands)
December 31, 2004

Pension and Relief Plans		
	Per Person	Total
	(Dollars)	(\$ in thousands)
Required Annual Contributions		
Pension Benefits		
Normal Cost	\$ 121.09	\$ 1,466
Cost of Unfunded Actuarial Accrued Liability (Surplus)	(45.36)	(549)
Total Pension Contribution Rate	\$ 75.73	\$ 917
Relief Benefits (Disability, Medical, and Survivor Benefits)		
Temporary or Partial Disability	\$ 28.54	\$ 508
Medical Costs	57.29	1,021
Survivors	14.11	251
Total Relief Rate	\$ 99.94	\$ 1,780
Total Pension and Relief	\$ 175.67	\$ 2,697
Operating Expense		
Administration and Expenses*	\$ 21.60	\$ 385
Total for Pension, Relief, and Expenses		\$ 3,082

*Estimated using actual dollars.

Note: Totals may not agree due to rounding.
Pension costs are allocated to pension members; relief and operating costs are allocated to all members.
Emergency medical service districts and reserve law enforcement officers pay the full cost, including administration.
Employers pay 1.5 percent of salary for full paid firefighters not in LEOFF.

Table 2
Volunteer Firefighters' Pension Plan
Development of Unfunded Actuarial Accrued Liability (Surplus)
(Dollars in Thousands)
December 31, 2004

Pension Plan	
	Total
a. Present Value of Fully Projected Benefits	\$ 122,905
b. Actuarial Value of Assets	\$ 120,040
c. Unfunded Present Value of Fully Projected Benefits (a-b)	\$ 2,865
d. Present Value of Future Normal Costs	
Employer	\$ 1,937
Employee	\$ 1,937
State	\$ 3,680
Total:	\$ 7,554
e. Unfunded Actuarial Accrued Liability (Surplus) (c-d)	\$ (4,689)
f. Contribution to Amortize the Unfunded Actuarial Accrued Liability (Surplus) by 12/31/2017	\$ (549)

Note: Totals may not agree due to rounding



Table 3
Volunteer Firefighters' Pension and Relief Plan
Comparison of Annual Plan Costs and Income
(Dollars in Thousands)
December 31, 2004

Pension and Relief Plans	
Pension and Relief Plans	Total
Actuarial Costs:	
Normal Cost	\$ 1,466
UAAL (Surplus) to 12/31/2017	(549)
Pension	917
Relief ¹	1,780
Total Actuarial Costs	<u>\$ 2,697</u>
Income:	
Fire Insurance Premium Tax ¹	4,726
Administration and Expenses ¹	(385)
	<u>\$ 4,341</u>
Pension:	
Employer	363
Employee	363
Other Pension ²	20
	<u>\$ 746</u>
Relief:	
Employer ⁴	534
Other Relief ^{2,3}	30
	<u>564</u>
Total Income	<u>5,652</u>
Surplus (deficit) Income	<u>\$ 2,954</u>

Note: Totals may not agree due to rounding.

¹ Estimated using actual dollars.

² Emergency Medical Services Districts and Reserve Law Enforcement Officers pay full cost.

³ Employer pays 1.5 percent of salary for full paid firefighters not in LEOFF.

⁴ Relief fees are based on the rate of \$30.00 per member.



Table 4
Volunteer Firefighters' Pension Plan
Development of Funding Ratio
(Dollars in Millions)
December 31, 2004

Pension Plan		
	Actuarial Value of Assets	Market Value of Assets
Present Value of Credited Projected Benefits	\$ 106.7	\$ 106.7
Assets	\$ 120.0	\$ 125.5
Unfunded(Surplus)	\$ (13.4)	\$ (18.8)
Funding Ratio:		
December 31, 2004	113%	118%
December 31, 2003	116%	113%
December 31, 2002**	122%	102%
December 31, 2001*	142%	124%
December 31, 2000*	144%	139%
December 31, 1999	132%	140%
December 31, 1998**	120%	126%
December 31, 1997	144%	152%
December 31, 1996	129%	136%
December 31, 1995*	118%	125%
December 31, 1994	112%	109%
December 31, 1993*	114%	116%
December 31, 1992	108%	111%
December 31, 1991**	103%	110%
December 31, 1990	111%	114%
December 31, 1989*	112%	114%
December 31, 1988	98%	96%

* Actuarial assumptions changed.

** Benefits were increased.

Table 5
Volunteer Firefighters' Pension Plan
Present Value of Pension Benefits
(Dollars in Millions)
December 31, 2004

Pension Plan		
	Credited Projected	Fully Projected
Present Value of Benefits		
Active Members		
Retirement	\$ 19.8	\$ 29.5
Vesting	13.6	20.0
Withdrawal	0.1	0.3
Total Actives	33.6	\$ 49.8
Inactive Members		
Retirees and Beneficiaries	\$ 49.0	\$ 49.0
Terminated Members	24.1	24.1
Total Inactives	\$ 73.1	\$ 73.1
2004 Total	\$ 106.7	\$ 122.9
2003 Total	\$ 103.4	\$ 119.6

Note: Totals may not agree due to rounding.

* Includes pension benefits only, not medical, disability, or survivor benefits.







Section IV

System Assets





Section IV - System Assets

Table 6
Volunteer Firefighters' Relief and Pension Plan
Market Value and Actuarial Value of Assets
(Dollars in Thousands)
December 31, 2004

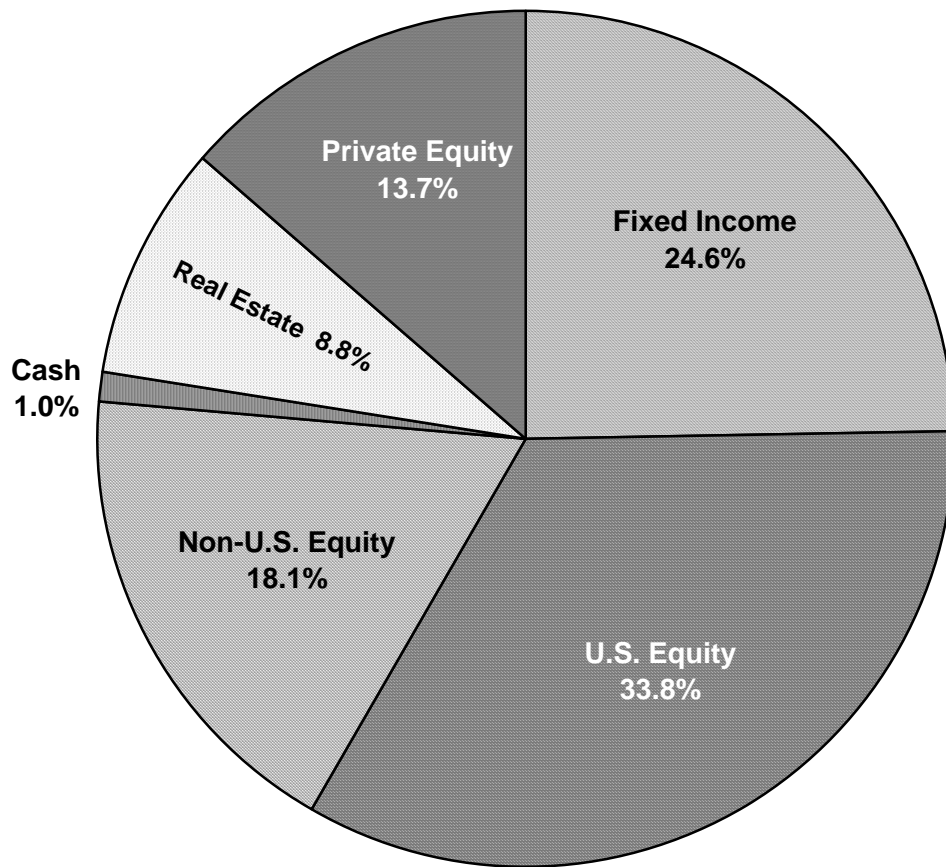
Assets as of December 31, 2004	
State Investment Board	\$ 109,219
State Treasury	\$ 16,282
Invested Assets	\$ 125,502
Accounts Payable	\$ 10
(a) Market Value of Assets	\$ 125,492
2004 Deferred Investment Gains (Losses)	\$ 4,058
2003 Deferred Investment Gains (Losses)	\$ 4,926
2002 Deferred Investment Gains (Losses)	\$ (3,533)
(b) Deferred Investment Gains (Losses)	\$ (5,452)
(c) Actuarial Value of Assets (a-b)	\$ 120,040
(d) Ratio of Actuarial to Market (a/b)	96%

Note: Totals may not agree due to rounding.

Assets as of December 31, 2003	
(a) Market Value of Assets	\$ 116,382
(b) Deferred Investment Gains (Losses)	\$ (3,644)
(c) Actuarial Value of Assets	\$ 120,026
(d) Ratio of Actuarial to Market	103%



Allocation of Assets as of December 31, 2004*



*State Investment Board



Table 7
Volunteer Firefighters' Pension and Relief Plan
Summary of Financial Activity
(Dollars in Thousands)
Calendar Year Ending December 31, 2004

Market Value December 31, 2003	\$ 116,382
Revenue:	
Contributions:	
Member	158
Employer	548
Total	706
Disability Fees	213
Investment Earnings Net of Expenses	12,597
Miscellaneous	-
Net Fire Insurance Premium Tax	4,726
Allocation to the Administration Fund*	(375)
Total Revenue	\$ 17,867
Disbursements:	
Refunds	17
Expenses	55
Subtotal	72
Benefits:	
Disability and Survivor	760
Medical	1,021
Relief Benefits	1,780
Retirement Pensions (monthly and lump sums)	6,903
Total Benefits	8,683
Total Disbursements	8,755
Payables:	
Change in Accounts Payable	1
Market Value December 31, 2004	\$ 125,492

Note: Totals may not agree due to rounding.

* Actual administration costs were \$330,000.







Section V

Membership Data





Section V -

Membership Data

Table 8
Volunteer Firefighters' Relief and Pension Plan
Membership
December 31, 2004

	1997*	1998*	1999	2000	2001	2002	2003	2004**
Actives								
Members in either System	N/A	18,095	18,169	17,612	17,794	18,545	17,752	17,813
Members in Relief System	18,074	17,909	18,053	17,607	17,794	18,545	17,752	17,813
Members in Pension System	12,330	12,381	12,210	12,254	11,996	11,903	12,043	12,109
Percent of Volunteers Covered	68%	68%	67%	70%	67%	64%	68%	68%
Average Age	40.6	40.7	40.8	40.8	40.9	41.0	41.0	41.0
Average Pension Benefit Svc	8.6	8.7	8.8	8.8	8.8	8.8	8.7	8.8
Average Total Service	9.9	10.0	10.1	10.1	10.1	10.1	10.0	10.0
Active Emergency Med. Technicians						26	28	38
Active Reserve Law Enforcement Officer						244	259	290
Retirees								
Number of Retirees/Beneficiaries	2,307	2,372	2,473	2,638	2,743	2,854	2,993	3,110
Annual Benefit Payments (in thousands)	\$3,658	\$4,811	\$4,999	\$5,277	\$5,448	\$5,639	\$6,383	\$6,639
Average Annual Benefit	\$1,586	\$2,029	\$2,021	\$2,000	\$1,986	\$1,976	\$2,132	\$2,135
Average Age	72.2	72.5	72.6	72.7	72.8	72.8	72.8	72.9
New Retirees	149	137	186	227	193	210	225	207
Term Vested								
Number of Term Vested	3,203	3,398	3,751	3,960	4,210	4,389	4,511	4,657
Survivor & Disabled								
Number of Survivors	14	14	14	13	14	14	13	14
Number of Disabled	12	12	12	12	14	15	16	16
Average Annual Benefit	\$16,843	\$16,793	\$16,884	\$16,947	\$17,086	\$17,828	\$18,026	\$18,333

*1997 and 1998 data have been revised using straight-line interpretation techniques for missing data.

**The number of Relief members in 2004 is estimated to be 15,844 counting members with multiple memberships once only.



Table 9
Volunteer Firefighters' Pension Plan
Active Members
Distribution by Age and Membership Service
December 31, 2004

Membership Service: (Nearest Year)	Age Group (Nearest Birthday)									Total
	Less than 25	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60 & Over	
1	362	201	180	131	80	59	41	29	19	1,102
2	385	213	193	134	101	84	53	33	21	1,217
3-4	532	407	392	302	261	165	131	73	79	2,342
5-9	148	424	396	396	375	331	257	128	131	2,586
10-14	0	61	232	284	290	317	239	155	110	1,688
15-19	0	0	20	127	223	276	270	189	103	1,208
20-24	0	0	0	13	138	245	255	186	169	1,006
25 +	0	0	0	0	23	121	246	281	289	960
Total	1,427	1,306	1,413	1,387	1,491	1,598	1,492	1,074	921	12,109

Table 10
Volunteer Firefighters' Pension Plan
Active Members
Distribution by Age and Benefit Service
December 31, 2004

Benefit Service: (Nearest Year)	Age Group (Nearest Birthday)									Total
	Less than 25	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60 & Over	
1	507	258	234	168	127	85	71	42	42	1,534
2	396	238	229	174	118	94	62	41	33	1,385
3-4	404	352	310	263	218	159	142	68	74	1,990
5-9	120	420	433	401	402	365	285	159	169	2,754
10-14	0	38	192	260	295	306	244	174	118	1,627
15-19	0	0	15	113	207	297	288	198	117	1,235
20-24	0	0	0	8	113	215	235	201	172	944
25 +	0	0	0	0	11	77	165	191	196	640
Total	1,427	1,306	1,413	1,387	1,491	1,598	1,492	1,074	921	12,109



Table 11
Volunteer Firefighters' Pension Plan
Service Retirees*
December 31, 2004

Age	Number of Retirees	Average Annual Benefit
60	28	\$ 1,119
61	36	1,761
62	48	1,744
63	80	1,993
64	92	1,827
65	115	2,022
66	181	2,158
67	205	2,029
68	194	2,049
69	150	2,005
70	168	2,133
71	151	2,210
72	143	2,271
73	132	2,136
74	144	2,162
75	145	2,251
76	122	2,215
77	141	2,243
78	125	2,357
79	115	2,197
80	117	2,202
81	78	2,276
82	67	2,196
83	81	2,233
84	60	2,354
85	56	2,019
86	21	2,265
87	24	2,481
88	21	2,210
89	19	2,340
90 +	51	2,158
Total	3110	\$ 2,135

**Includes beneficiaries of service retirees.*

Table 12
Volunteer Firefighters' Relief Plan
Disabilities and Survivors
December 31, 2004

Disabilities		
Age	Number of Lives	Average Annual Benefit
32	1	\$ 16,912
49	1	20,295
51	2	18,604
52	2	18,604
56	1	20,295
65	1	20,295
67	1	16,912
68	1	16,912
69	1	23,031
70	3	21,071
77	1	20,295
79	1	20,295
Total	16	\$ 19,554

Survivors		
Age	Number of Lives	Average Annual Benefit
47	2	\$ 16,912
50	1	17,260
65	1	16,912
66	2	16,912
67	1	16,912
68	2	16,912
80	1	16,912
81	1	16,912
85	1	16,912
87	2	16,912
Total	14	\$ 16,937







Appendix A

Actuarial Assumptions





Appendix A - Actuarial Assumptions

Investment Returns:

We have assumed an annual investment return of 8.0 percent.

Mortality:

Mortality rates are from the RP 2000 Combined Healthy Mortality Table. See Table 15.

Retirement Rates:

Retirement rates begin at age 60 for active members. The rates are not a smooth function of age but instead have bumps at ages 60, 62, and 65. See Table 14.

Terminated vested members are assumed to retire at age 65.

Termination:

The termination rates are a function of membership service. Termination rates in the first ten years start at 17 percent and grade down to 9 percent. With ten or more years of service the member is entitled to a deferred retirement pension. There are noticeable bumps at 20 years (when the service retirement factor significantly improves from 35 percent to 75 percent) and at 25 years (when maximum benefit levels can first be reached). See Table 13.



Table 13
Volunteer Firefighters' Pension Plan
Termination Rates
December 31, 2004

Probability of Termination	
Years of Membership Service	Rate
1	17%
2	17%
3	16%
4	15%
5	14%
6	12%
7	11%
8	9%
9	9%
10	9%
11	8%
12	8%
13	6%
14	6%
15	6%
16	5%
17	5%
18	4%
19	4%
20	9%
21	4%
22	4%
23	4%
24	4%
25	19%
26	13%
27	8%

**The early retirement factor improves at 10, 15, 20, and 25 years of membership service.*



Table 14
 Volunteer Firefighters' Pension Plan
Retirement Rates
December 31, 2004

Probability of Retirement	
Age	Rate
60	6%
61	3%
62	17%
63	9%
64	3%
65	46%
66+	26%

Table 15
 Volunteer Firefighters' Pension Plan
Mortality Rates
December 31, 2004

RP-2000 Combined Healthy Table		
Age	Male Mortality (in %)	Female Mortality (in %)
20	0.0345	0.0191
25	0.0376	0.0207
30	0.0444	0.0264
35	0.0773	0.0475
40	0.1079	0.0706
45	0.1508	0.1124
50	0.2138	0.1676
55	0.3624	0.2717
60	0.6747	0.5055
65	1.2737	0.9706
70	2.2206	1.6742
75	3.7834	2.8106
80	6.4368	4.5879
85	11.0757	7.7446
90	18.3408	13.1682
95	26.7491	19.4509







Appendix B

Actuarial Methods





Appendix B - Actuarial Methods

Asset Valuation Method:

The actuarial value of assets is calculated under an adjusted market value method by starting with the market value of assets. For subsequent years the actuarial value of assets is determined by adjusting the market value of assets to reflect the difference between the actual investment return and the expected investment return during each of the last four years at the rate of 25 percent per year (annual recognition).

Actuarial Cost Method:

Every actuarial cost method is defined by the manner of development of two items:

- ❖ Normal Cost
- ❖ Unfunded Actuarial Accrued Liability

The contribution rate is developed as the sum of the Normal Cost and an amount to amortize the Unfunded Actuarial Accrued Liability.

The actuarial cost method utilized in the valuation to develop the pension contribution rates for Volunteer Firefighters' is a version of the Entry Age Cost Method. Under this method, the Normal Cost of each type of benefit in the pension system is determined as that contribution rate that, if paid from entry date to retirement date on behalf of the average member of the system, would fully support that benefit for such member.

The Unfunded Actuarial Accrued Liability is the excess of:

- ✓ The Present Value of Fully Projected Benefits over
- ✓ The sum of:
 - (a) the Present Value of Future Normal Costs under the System; and
 - (b) the Actuarial Value of Assets.

Such an excess can arise for numerous reasons. While insufficient contributions and unrealistic actuarial assumptions can contribute, the major reason for its development is simply the natural growth of a retirement system. Examples of conditions that give rise to Unfunded Actuarial Accrued Liabilities are:

- ✓ Benefits granted for service prior to establishment of the plan;
- ✓ Retroactive benefit increases or plan liberalizations;



- ✓ Change of actuarial assumptions; and
- ✓ Actual experience under the System significantly at variance with the actuarial assumptions.

The contributions toward the Unfunded Actuarial Accrued Liability have been developed in this valuation as level dollar amounts which will amortize this item by December 31, 2017.

Relief Plan:

Relief costs are included on a pay-as-you-go basis. Last year's actual costs are used to determine this year's contribution rates. No medical trend assumption was used.

Operating Expenses:

The actual administration and other miscellaneous expenses incurred last year were used to determine the contribution rate this year.





Appendix C

Provisions of the System





Volunteer Firefighters' Relief and Pension Fund

As of December 31, 2004



Provisions of the System

There are two employee benefits provided to volunteer fire fighters:

- ❖ Optional membership in the retirement plan.
- ❖ Mandatory death and disability coverage for duty-related injuries.

These benefits are part of two separate and distinct plans, authorized by different sections of statute, and should not be confused as one plan.

The following section summarizes the benefits and contributions established under Chapter 41.24 RCW. This section is meant for purposes of reference and does not detail the rules and regulations upon which the actuarial calculations are made.

Participation:

RCW 41.24.010 (10):

“Participant” means: (a) For purposes of relief, any reserve officer who is or may become eligible for relief under this chapter or any fire fighter or emergency worker; and (b) for purposes of retirement pension, any fire fighter, emergency worker, or reserve officer who is or may become eligible to receive a benefit of any type under the retirement provisions of this chapter, or whose beneficiary may be eligible to receive any such benefit.

Contributions:

- ✓ *Death and Disability* - The member does not contribute. Municipalities contribute \$30.00 annually on behalf of each member. Also, municipalities contribute 1.5 percent of the annual salary of full paid firefighters not covered under LEOFF.
- ✓ *Retirement* - If a member chooses to enroll, they contribute \$30.00 annually and the municipality pays \$30.00. Municipalities may pay the entire contribution for the member. Also, 40 percent of the net premium taxes on fire insurance policies are paid into the plan.



Refund of Contributions:

Upon termination, members are entitled to a refund of their contributions without interest. If the member chooses this option, he/she then forfeits any earned pension benefits.

Buying Back Past Service:

If the pension payment is missed in any year following enrollment in the plan, it may be paid at a later date. Interest is levied at a rate of 1 percent per month.

Medical Benefits (*Relief Plan*):

Physician and hospitalization costs are covered to the extent set out in the RCWs.

Disability Payments (*Relief Plan*):

RCW 41.24.150

- ✓ *Duty Disability* - Members receive payments of \$2,550 per month for up to six months, thereafter payments are reduced. Disabled members receive \$1,275 per month, their spouse \$255, and dependant children \$110.
- ✓ *Effective July 1, 2001*, benefits are increased annually in line with the CPI Urban Wage Earners and Clerical Workers, all items, all cities index.
- ✓ *Non-Duty Disability* - None.

Death Benefits (*Relief Plan*):

RCW 41.24.160

- ✓ *Survivors* - Surviving spouses of active duty deaths shall be paid \$1,275 monthly. An additional \$110 is paid monthly to member's children while they are under 18 years old. The survivor benefits are subject to a maximum of \$2,550 monthly.
- ✓ *Effective July 1, 2001*, the maximum of \$2,550 is increased annually in line with the CPI Urban Wage Earners and Clerical Workers, all items, all cities index.



RCW 41.24.160

- ✓ *Duty Death* - A lump sum of \$152,000 is made.

RCW 41.24.230

- ✓ *Funeral and Burial Expenses* - A lump sum of \$2,000 is paid for active duty deaths. Members receiving disability benefits at the time of death shall be paid \$500.

Death Benefits:

RCW 41.24.180

- ✓ *Non-duty Death* - If the member had ten or more years of service, the spouse may elect an annuity instead of a refund of contributions. The annuity is the member's accrued benefit actuarially adjusted to reflect 100 percent Joint and Survivor pop-up pension and further actuarially reduced to reflect the difference in the number of years between the fire fighter's age at death and age 65.

Retirement Pensions:

RCW 41.24.170

At age 65 and ten years of service, the pension is unreduced for age. Early retirement eligibility begins at age 60 with ten years of Service, with a reduction for age. In either case the pension is reduced for service less than 25 years.

The monthly pension benefit formula is:

$$(\$50 + \$10 \times \text{Benefit Service}) \times (\text{Membership Service Factor}) \times (\text{Age Factor})$$

"Benefit Service" is the number of years the member has made pension contributions.
"Membership Service" is the number of years the member has been a member of the Relief Plan.

The maximum monthly pension benefit is \$300.



Membership Service Factor for Less than 25 Years of Service:				
Membership Service	10 to 14	15 to 19	20 to 24	25 or more
Retirement Factor	20%	35%	75%	100%

Age Factor for Retirement Before Age 65:						
Age	60	61	62	63	64	65
Retirement Factor	60%	68%	76%	84%	92%	100%

Retirement Options:

RCW 41.24.172

The normal form of benefit is a Single Life pension.

Retirees have the option of selecting a 100 percent Joint and Survivor Pop-up pension instead. If the member dies first, the pension continues to the spouse, unreduced. If the spouse dies first, the pension pops up to the amount the member would have received under the normal form.

Plan Changes:

Effective July 24, 2005, Chapter 37, Laws of 2005 (SB 5135), increases the annual fee that each municipal corporation must pay for Relief Plan members from \$10.00 to \$30.00.





Appendix D

Glossary





Volunteer Firefighters' Relief and Pension Fund

As of December 31, 2004



Appendix D - Glossary

Actuarial accrued liability:

Computed differently under different funding methods, the actuarial accrued liability generally represents the portion of the present value of fully projected benefits attributable to service credit that has been earned (or accrued) as of the valuation date.

Actuarial gain or loss:

Experience of the plan, from one year to the next, which differs from that assumed will result in an actuarial gain or loss. For example, an actuarial gain would occur if assets earned 10 percent for a given year since the assumed interest rate in the valuation is 8 percent.

Actuarial value of assets:

The value of pension plan investments and other property used by the actuary for the purpose of an actuarial valuation (sometimes referred to as valuation assets). It is common for actuaries to select an actuarial valuation method that smoothes the effects of short-term volatility in the market value of assets.

Normal cost:

Computed differently under different funding methods, the normal cost generally represents the portion of the cost of projected benefits allocated to the current plan year. The employer normal cost is the total normal cost of the plan reduced by employee contributions.

Present value of credited projected benefits:

The actuarial accrued liability computed under the Projected Unit Credit (PUC) funding method.

Present value of fully projected benefits:

Computed by projecting the total future benefit cash flow from the plan, using actuarial assumptions (i.e., probability of death, retirement, salary increases, etc.), and then discounting the cash flow to the valuation date using the valuation interest rate.



Projected Unit Credit (PUC) funding method:

The PUC funding method is a standard actuarial funding method. The annual cost of benefits under PUC is comprised of two components:

- ❖ Normal cost; plus
- ❖ Amortization of the unfunded actuarial accrued liability.

The PUC normal cost is the estimated present value of projected benefits to be earned in the current plan year.

Unfunded actuarial accrued liability:

The excess, if any, of the actuarial accrued liability over the actuarial value of assets. In other words, the present value of benefits earned to date that are not covered by plan assets.





Appendix E

Emergency Medical Service Districts and Reserve Law Enforcement Officers





Volunteer Firefighters' Relief and Pension Fund

As of December 31, 2004



Emergency Medical Service Districts and Reserve Law Enforcement Officers

Emergency Medical Service Districts:

Chapter 331, Laws of 1993 extended the membership provisions of the pension and relief plans to include Emergency Medical Service District (EMSD) Volunteers.

Applicable RCW states that the funding of the EMSD volunteers should be consistent with the most recent actuarial valuation.

The funding of the system includes contributions from the members and their districts at a rate established in statute. The total of these is less than the normal cost. The balance of the normal cost comes from another revenue source, 40 percent of the state's premium tax on fire insurance policies. Since the premium tax is independent of the number of members, the addition of new members lowers the system's funding. To prevent this, the entire normal cost and administration expenses shall be paid by the EMSDs and their volunteers. Volunteers pay the fixed dollar rate established in statute. The EMSDs pay the fixed dollar rate plus any excess cost.

Reserve Law Enforcement Officers:

Chapter 11, Laws of 1995 extended the membership provisions of the pension plan to include Reserve Law Enforcement Officers. The pension provisions mirrored those of the EMSDs.

Chapter 148, Laws of 1999 extended the membership provisions of the relief plan to include Reserve Law Enforcement Officers. The relief provisions mirrored those of the EMSDs.







Appendix F

Relief Benefits on a Projected Basis





Appendix F -

Relief Benefits on a Projected Basis

Comparison of Annual Costs Versus Present Value of Projected Benefits (PVPB) Basis

Dollars (in Millions)	Total Costs		Per Person Cost	
	Annual	PVPB Basis	Annual	PVPB Basis
Medical Benefits				
Present Value of Medical Benefits	\$8.674	\$8.674		
Annual Benefit Payments / Cost	\$1.021	\$1.606	\$57.29	\$90.18
Current Disability Benefits				
Present Value of Disability Benefits	\$3.920	\$3.920		
Annual Benefit Payments / Cost	\$0.313	\$0.459	\$17.56	\$25.78
Current Survivor Benefits				
Present Value of Survivor Benefits	\$2.429	\$2.429		
Annual Benefit Payments / Cost	\$0.237	\$0.285	\$13.31	\$15.97
Short Term Disability and Survivor Benefits				
Short Term Annual Benefits	\$0.210	\$0.210		
Annual Benefit Payments / Cost	\$0.210	\$0.210	\$11.77	\$11.77
Total Relief Benefits				
Present Value of Benefits	\$15.233	\$15.233		
Annual benefit Payments / Cost	\$1.781	\$2.560	\$99.93	\$143.70

Assumptions and Methods

1. Projected Relief Benefits were valued using an interest rate of 8%.
2. Disability and Survivor COLAs increase in line with the assumed inflation rate of 3.5%.
3. Medical inflation is assumed to be 10.5% in 2005, reducing by 0.5% each year, until it levels off at 3.5% in 2019.
4. The funding method is a level dollar amount over the future working lifetime.
5. Funding of current disability and survivor benefits are to 2017, the UAAL amortization period. There are currently 16 disabled members and 14 survivor participants.
6. The per-person costs were determined by dividing by 17,813 members.

Note:

Benefits available for future disability and death claims, from current active members, have not been included in the above costs.



